THE ZOOLOGIST

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NOTES ON THE ORNITHOLOGY OF OXFORDSHIRE, 1909.

By O. V. Aplin, F.L.S.

January 1st.—Slow thaw; snow wasting slowly. A number of small birds reported picked up dead round ricks lately.

5th.—No Thrush song since frost set in at end of last year.

6th.—A Nuthatch (now a rarity here) again frequents the old plum-tree here to hammer food. Only a few nutshells under the tree, but many acorn-shells. I heard it "trilling" a few days ago.

10th.—Great, Blue, and Coal-Tits are constantly visiting the fat hung up for them, but the Marsh-Tit I never see. The last-named is a seed-eater or a "nuttist," and comes about my garden a good deal in the autumn. In winter its favourite haunt is the vicinity of beech-trees.

11th.—Blue Tit singing; Coal-Tit with spring note.

17th.—An ordinary snowdrop in bloom.

20th.—A Song-Thrush singing. Hardly any about since the frost.

21st.—Received a Short-eared Owl, shot on the 19th, from a rushy meadow at Chadlington. Two Thrushes sang despite the fog.

23rd.—Mr. Tyrrell reported later that great numbers of Bramblings (consorting with Chaffinches, Greenfinches, and Sparrows) were noticed this month at Deddington, Swerford, South Newington, &c.

28th.—Saw, at Mr. Bartlett's, an immature male Merlin, shot at Tusmore in the early autumn of last year. A Grey Crow reported as seen recently at Sibford.

A Black-headed Gull and a Common Tern were, Mr. Tyrrell tells me, shot on the canal near Banbury this month, and sent to him to preserve.

A rather dry, cold month; hard frosts in the latter part.

February.—Spring flowers very backward.

4th.—Mistle-Thrush singing. Few Song-Thrushes about yet.

5th.—Flock of two or three hundred Bramblings and Chaffinches on a ploughed field at Milcomb. The former were in the majority, and among them were a good many males with dark heads and mantles and white rumps. Fieldfares and Redwings continue rare.

6th.—During a long afternoon after the Basset hounds I did not see one of those birds. A good many Song-Thrushes have returned. Lark singing for first time since late autumn. A flock of about a score of Corn-Buntings on north side of Wroxton, where they are always to be found in the breeding season—a most local bird.

9th.—Encouraged by a slight snow and rain, a Blackbird sang. Hedge-Sparrow sings now.

10th.—Nuthatch feeding on fat.

14th.—I put twelve nuts in the Nuthatch-frame between 11 and 12 a.m., and found, at 3 p.m., that they had all been taken. I think the birds hide most of them for future use when they find a good supply.

15th.—Four Bullfinches in a plum-tree at the same time—poor buds!

17th.—Crows go about quietly in pairs now, unless two pairs come together. Chaffinches sang a little. Country very dry.

19th.—An Otter which has been about all the winter was shot at Upper Grove Mill to-day.

20th.—Severe weather. A very large flock of small birds comprised House- and Tree-Sparrows, Yellow Buntings and Greenfinches, with a few Chaffinches and Bramblings.

21st.—The pair of Nuthatches we have here picked up from the ground in front of my window a big handful of nuts in less than a quarter of an hour; most, perhaps all, of these

must have been hidden. They hide them in old thatched roofs.

22nd.—Very little song of any kind, except from the hardy Hedge-Sparrow.

27th.—Frost and snow, but a Blackbird sang a little; no Thrush song for some days. No Wren song all the cold weather this month, and the Wrens I have seen look fluffed up and dejected. Although cheery and bright in the early part of a frost, however severe, I doubt now if the Wren is a very hardy bird. If the weather is cold it does not sing at *this* end of the winter, and its habit of roosting in company in old nests and holes shows that it feels the cold. A Herring-Gull shot at Somerton this month (Tyrrell).

28th.—Milder. A Wren sang.

A very dry (less than half an inch of rain) and a cold month. Frost on twenty-five days.

March 2nd.—The Hedge-Sparrow's tarsi (male at all events) now are a dull beefy-red, and it walks as well as hops.

3rd.—Lots of birds feeding outside the window. The Greenfinches will pick up corn eagerly.

13th.—Spring flowers a complete failure so far. A *Turdus* nest partly built in a sheltered yew-hedge—a lot of old snow lies on the north side of the shrubbery. Comparatively few Thrushes about.

16th.—The high ground about Tadmarton Heath is still a good deal covered with snow, and the hills at the back of Swalcliffe and all along towards Sibford Heath and Epwell are white. A Peregrine flew over a belt of trees at the Highlands, a Rook giving a grievous croak as it went over.

19th.—The first night without frost for weeks.

21st.—A Blackbird's nest in the yew-hedge has one egg; the other nest has been abandoned.

26th.—A little apricot-blossom.

30th.—Peewits on fallows.

Very cold up to the 19th. Frost on twenty-three days, and snow fell or lay on ground on seventeen days.

April 3rd.—Tawny Owl (breeding) hoots rarely now and then in a soft tremulous way; not with the volley of high clear hoots we hear on cold moonlit winter nights.

5th.—Brimstone Butterfly in garden. A late spring.

6th.—Two Chiffchaffs in song in Milcomb bushes. A new Crow's nest (five eggs on 27th). Country quite wintry looking.

7th.—A Swallow over the garden. Several Brimstone and Tortoiseshell Butterflies have been seen, and I saw that a Tortoise in a neighbour's garden had emerged to-day.

8th.—Two Swallows together over garden, singing.

9th.—Hedges black, country wintry and dry. Greenfinch singing.

10th.—Several Swallows.

16th.—Redstart. Magpie's nest with five eggs.

19th.—Cuckoo noisy. Tree-Pipit. I never before saw Swallows here *in numbers* so early.

20th.—House-Martin. Willow-Wren.

24th.—Lesser Whitethroat.

25th.—Song-Thrushes have suddenly begun building; three, if not four, nests have been put up in the garden during the last day or two. Clutch of five Crow's eggs brought in.

26th.—Blackcap.

27th.—Away until May 1st. Clutch of three hard-sat Crow's eggs brought in.

Frost on twelve days, snow on two; over two inches of rain fell, chiefly in the latter part of the month.

May 1st.—A little snow and heavy rain.

2nd.—A male Nightjar flew in the face of a man on a bicycle between here and Banbury to-night, and was captured; I saw it later.

4th.—Swifts.

8th.—A Quail (heard since 3rd and picked up on 6th) brought from Adderbury (*vide* Zool. 1909, p. 469).

9th.—It was reported in the 'Oxford Times' of the 22nd that to-day three pairs of Redshanks were seen at the old spot below Eynsham, and three Common and one Black Tern close to Oxford.

11th.—Moths flew in at window at night. At 11 p.m., calm and starlight, I heard Whimbrel passing over.

12th.—Cinnabar month. Fine warm month so far, and, as it proved, May afforded the best weather of the year. Left home until 27th.

28th.—Young Starlings out of the nest.

June 2nd.—A Linnet has a nest (six eggs eventually) in an Irish yew in the garden, so exposed that anyone passing on the path can see the bird, and so insecurely fixed that it slipped down on one side, and the young had great difficulty in keeping in it until they were ready to leave. Five were reared.

5th.—Young Starlings now in considerable flocks, and frequent oak-trees partly defoliated by caterpillars.

7th.—Turtle-Dove's nest in hedge with two eggs was remarkably slight—only a few rootlets for lining, and the eggs showing through very plainly. A Blackbird sang from the barn-roof ridge, and often did so afterwards; but this is a new habit here.

13th.—Redstart has five eggs in a box. This bird has been strangely scarce of late. The young in the nest perished—I think of starvation, in consequence of the most inclement weather.

15th.—To Bampton, and on this and the next day made the following notes:—I found that the Redshank had established itself as a breeding species in this part of the Isis valley since I was here last, and below Tadpole Bridge I saw two pairs and an odd bird which probably had a mate not far off. They were, I have no doubt, breeding, but the great seas of hay-grass would make a search difficult. One pair seemed from their actions to have young hidden in some hay-grass, but they themselves usually settled in a rough thistle and rush-grown meadow on the opposite bank, because it had been grazed and was bare; the low flood-bank, too, was a favourite perch for them, and along it they ran in an excited manner. Their familiar cries, "teur-y, teur-y-leur," drew my attention first, and soon the birds were flying overhead, "kipping" in an excited way, sometimes settling to run a few steps; then into the air again, and flying round, crying almost incessantly. These breeding Redshanks are a great addition to the avifauna of the Isis valley. In this calm sunny evening nothing could be prettier than their grey and white plumage and red legs set against the full rich green of the meadows, thickly bedecked with buttercups, of this lush, luxuriant valley. Peewits were pretty common, feeding at the shelving edges of the river, and there were already flocks in the grazed meadows. Moorhens' chuckles and Dabchicks' rattling cries

sounded from the thick, high growth which generally borders both banks, and makes the river itself very private for the birds, for boats are very infrequent on it. There are a few Wild Ducks too, and Herons are often seen—one came close to me by mistake! I heard only one Corn-Crake in all those miles of hay-grass. Reed-Warblers I noticed in three places in willows, and not distributed evenly along the banks—though there are reeds—like the Sedge-Warblers and Reed-Buntings. The Dabchick must be quite numerous, to judge from their frequent cries, and (although I had to propel as well as steer my boat, and the river winds), I found three nests, two with single eggs, one covered and the other (looking new-laid) not; the third nest had two downy young just out, and two hatching eggs. Moorhens have their nests on the inner side of this belt of rushes and other water-plants—the iris and the great water-dock both very fine—where they are easily seen from a boat. A row of pollard-willows was inhabited by Tree-Sparrows, whose noisy, shrill cries caused me to land and find a nest just being built, of rather green materials. Carrion-Crows, sitting on a fence at a sluice-gate or flying low over the grass top, are common in the valley, and no doubt keep the wildfowl down. Quite a feature of Bampton itself was the bunch of Swifts, which in the evening, and at 3 a.m. too, were swinging round, low down, the little open space in the town, "swee-ree"-ing loudly.

17th.—News from Mr. Calvert of two Little Owls shot at Witney last winter, and of one put out of a hollow tree at Pudlicote on the 19th of last month.

19th.—Garden-Warblers had young just out of the nest; the latter was just dry grass and a slight affair. Cuckoos and Turtle-Doves common this year, and the former still in good song. Mr. Noble tells me that in Hennerton meadows, close to the river, he saw three adult Lesser Black-backed Gulls and two Herring-Gulls fly over within sixty yards. It was early in the month and blowing hard from S.E.; a curious time of the year for adult Gulls to be inland.

24th.—My brother heard a Corn-Crake at Willscote Hill.

25th.—Not over 49° all day; wintry, dismal weather; a cold thick mist last night. Everything is overgrown and spoiling for want of sun.

29th.—Low part of village flooded.

30th.—Examined in the flesh a Little Bittern picked up at Somerton (*vide* Zool. 1909, 468).

A cold, wet month, about four and a half inches of rain, which fell on more than half the days of the month; wind usually from N. and N.W.

July 1st.—Hay-meadows in the Cherwell Valley standing in flood water—to be seen among the long grass. At the end of June or early this month Mr. Calvert saw and heard "drumming" Snipe at Minster Lovell (*vide* Zool. 1907, 325).

9th.—Cuckoo heard for last time.

10th.—The decrease in the numbers of our breeding Starlings is very apparent. Not one nest on these premises this year. It was in the years 1902–3–4 that they reached their greatest strength; in one of those years every box big enough (even within four or five feet of the ground) and every hole under the thatched eaves of buildings was filled; and the new painting in the yard ruined by them!

14th.—Starlings feeding young in nest in roof of the G.W.R. station at Banbury: there has been no "run" on nesting-holes this year, and this must without doubt have been a second brood. It is too late to be a brood reared by a pair which had merely lost their first eggs.

22nd.—Young Bullfinches just out of nest have a wheezy, creaking "peep."

27th.—A great rain—nearly an inch.

29th.—Report of Red-backed Shrikes having bred in Banbury Cemetery, and of the scarcity of Nightingales, Redstarts (especially) about Swerford. All the Warblers and most of the summer birds, except Swallows and Martins and Cuckoos and Turtle-Doves, are very scarce. Redstarts have been remarkably scarce for two or three years.

A cool and wet month, often windy. Wind generally in the west, and nearly four inches of rain.

August 4th.—A female Red-backed Shrike close to Bloxham Station.

7th.—Congregation of Martins and some Swallows on house roof this morning.

8th.—Garden-Warbler sang; this garden has lately been

full of them, eating the fruit. Thrushes have sung continuously so far.

9th.—The bulk of the Swifts gone. The hottest day of summer (77°) so far.

10th.—Saw four Swifts. I suppose their young ones were starved, and so having none to rear they have gone early. I never saw any number in the air together at the time the young should have been on the wing.

12th.—Two Swifts. Thrush sang morning and evening. 81°.

14th.—House-Martins have had a good breeding season; there are many about.

15th.—Some fifty or sixty Starlings rose at once from my gooseberry bushes! At 5 a.m. I heard Gulls calling as they passed over, going west. 81° again. From the 3rd to the 17th, when there was a great rain, we had the only summer weather.

25th.—Martins congregating on roof.

Nearly two inches of rain—on fifteen days. Wind generally N.W. A late harvest, but most of the wheat cut by the end of this month.

Birds have sung late this year. Blackbird occasionally down to Aug. 3rd. Thrush continuously to the 15th. Greenfinch to the 24th. Robins began to sing again about Aug. 11th.

September 1st.—Shooting delayed by standing oats, barley, and beans. A flock of about a hundred Peewits in some thin swedes.

3rd.—A great many Martins on the roof.

5th.—A Peacock Butterfly. A most fruitful year, but all spoilt by bad weather.

8th.—News from Mr. Fowler of Hobbies seen nearly every evening waiting for the Swallows going to roost in the osier-bed at Kingham.

10th.—Report of three Land-Rails shot about Sibford Heath on 7th. I strongly suspect that Dartford Warblers inhabit a piece of scattered gorse near here. To-day I heard notes and saw a bird, both of which appeared to right, but I had no glasses and could not be sure.

15th.—No Pipits seen yet in the few roots I have walked.

16th.—Swallows with young in nest in stable.

17th.—Severe thunderstorm and heavy rain; extended over

a good deal of the country and much damage done by lightning and, in some parts, hail.

18th.—Report of two Land-Rails shot and another seen at Milcomb on 14th. A small flock of Meadow-Pipits.

19th.—Starlings catching flies high in air. A diminution of Swallows and Martins.

20th.—Flock of Mistle-Thrushes in grass field.

21st.—A big gathering of Martins and some Swallows.

22nd.—Brimstone Butterfly.

24th.—Several small charms of Goldfinches about thistly fields on South Newington Hill. Lark singing.

25th.—A young Song-Thrush sang in an undertone.

26th.—Only a small gathering of Martins on roof; a lot gone. Few Pipits seen yet. Not such a bad season for Partridges here as in some districts. What birds we find are big and strong, and there are some big coveys. We find no late broods. Some birds must have bred early, and the young were strong before the bad weather came. The later broods probably all perished. Red-legged Partridges very scarce.

30th.—Cherwell Valley heavily flooded.

Over three inches of rain; fell on more than half the days of the month. Wind chiefly north. A late and delayed harvest.

October 1st.—Long-eared Owl in spinney at South Newington Hill. Mistle-Thrushes still in small flocks, but some screeching about the hedges. Country deplorably wet. Corn rotting on the ground.

17th.—About twenty Swallows and Martins over garden.

19th.—Brimstone Butterfly.

21st.—Some Pipits; on the move. No longer see many Mistle-Thrushes about. Lots of barley and oats out.

24th.—A Blackbird has sung for some days in a low tone—evidently a young bird. Part of village flooded.

27th.—Caterpillars have destroyed a great quantity of the cabbage tribe lately.

A very wet month; warm until the last week of the month when frosts set in, and snow fell on 30th. Nearly three and a half inches of rain, on twenty-seven days. S.W.

November 1st.—A good many Fieldfares and some passing over. One Redwing.

8th.—Much barley still out and some not cut.

10th.—Many Redwings. Larks sang in first few days of month; silent now.

11th.—News of a Hobby shot at Hanwell in June.

12th.—Song-Thrush sang well this evening. This is the opening of the usual spell of song, which would go on here all winter if the season were very mild.

13th.—A Lark sang a very little.

14th.—Snow.

18th.—Wren still sings.

23rd.—A Nuthatch here; only one since February.

28th.—Song-Thrushes sing well, but not many here this autumn.

A good deal of frosty weather this month from the 6th onwards. Rain on thirteen days only amounted to about ·70 in., but air damp. Wind N.W.

December 3rd.—Enormous flocks of Starlings here now. A great many Redwings, many Fieldfares, and swarms of Larks and Finches on the stubbles.

4th.—The fruit on three or four plum-trees was not gathered, or hardly any of it. Much of this now remains, brown and shrivelled, on the trees, and affords food for Thrushes, &c. Some damsons left on a tree have not yet been eaten. Greenfinches now feeding on the berries of *Cotoneaster lelandi* and the hips of sweetbriars; they will stay in the garden in numbers so long as the latter last.

5th.—Aconite in flower, not quite turned up; the earliest I ever saw. Snow on ground early.

7th.—Thrushes and Blackbirds eating the damsons.

10th.—From 9.30 a.m. for an hour (when I had to leave) Fieldfares were passing over (W.N.W. to E.S.E.) in straggling loose flocks of twenty or thirty to fifty or sixty, at short intervals, and at their usual height. I did not go out until 9.30, so I do not know how long the flight had been going on, nor how long it lasted. But I found later a great many in flocks feeding in the big hedges which are red with haws; and a lot of Redwings too. There was a change to milder weather last night.

11th.—Wren sings sometimes, but the cold has practically silenced the Thrushes.

14th.—Mistle-Thrush sang a little.

18th.—Hedge-Sparrow sang for first time since summer.

22nd.—Starlings feeding greedily on holly berries. Weather frosty the last ten days or so, but changed to-day.

28th.—Very warm day. Two Larks sang about noon. Coal-Tit with spring note for some days. Thrushes nearly all gone. A Redshank shot on the Cherwell close to Banbury, and sent to me two days later. Bullfinches abundant this winter.

31st.—Mr. E. Tyrrell writes: "Several flocks of Wild Geese have been flying over here [Banbury] these last few days, flying low down." The very few Song-Thrushes we have left sing a little.

Rain on twenty-four days, amounting to over three and a half inches. Air damp. Wind S.W., but slight snow more than once, and frost on ten days; the lowest temperature 20° on 21st.

The great immigration of Crossbills does not seem to have affected this district, where we have few conifers. The following records must be added to this report:—

Aug 5th. Flock of about twenty at Henley (? Berks), end of August. A few at Reading (Berks). Nov. 5th. Flock of nineteen, Shotover, Oxford. Nov. 11th. Small flock, Cuddesdon. Nov. 17th. Small flock flying over Oxford. ('Science Gossip,' December, 1909, p. 406.)

Flocks first seen at Cornwell on Sept. 2nd and onwards until January, 1910, when their numbers appeared to decrease; the last time they were seen was on February 16th. (F. W. Stowe, 'British Birds,' 1910, p. 332.)

But Mr. Fowler wrote on March 25th, 1910, that there were still Crossbills at Cornwell, scattered about and possibly nesting. A pair were believed to be nesting just behind Cornwell House. Mr. Fowler had watched one, two or three days before, at work on larch-cones close to Cornwell village, and others had been seen (*in lit.*).

COMPARISONS OF OTOLITHS FOUND IN FISHES.

By Colonel C. E. Shepherd.

Facts in connection with otoliths are unfortunately not recorded in sufficient numbers to make it possible to use such facts for any deductions as to the uses of these stones being made, even if it be eventually found that such deductions could be made. It would be well then to record facts, as they become known, connoting the life habits of a fish and its otolith, and to compare, when possible, the size of these stones in different fishes, more especially when their habits are similar, and even when totally dissimilar. Again, the otolith, whilst maintaining its family resemblance, is yet so different in different families that this lends further interest to the subject.

In a former paper* it was pointed out that the size of the fish established no corresponding rule that its otolith would be larger or smaller than that of another fish of a different family, but of a larger or smaller size. The Smelt, *Osmerus eperlanus*, has a larger otolith (Plate I. fig. 13), though it is a smaller fish, than that of *Auxis rochei*, fig. 2, on the same plate. The plate shows the otoliths, natural size.

This comparison as to the size of the otolith with the size of the fish, although sufficiently obvious in the above-mentioned case, hardly admits of definite accuracy, but is rather one that strikes the eye when dissecting out an otolith—*e.g.* the otoliths in Plate I. fig. 1, from a *Pelamys sarda*, which was 28 in. long, and fig. 2 from an *Auxis rochei* that was 24 in. long, are, the first comparatively and the second actually, smaller than the otoliths of a Flying-fish (*Exocœtus pœcilopterus*) that was about 8 in. long. It is in this manner that all the comparisons as to size in this paper are made. As another contrast, we have those of the Horse-Mackerel, *Caranx trachurus* (Plate I. fig. 7), and the Bass, *Morone labrax* (Plate I. fig. 8); these fish have large otoliths,

* In 'Knowledge and Illustrated Scientific News,' March, 1909.

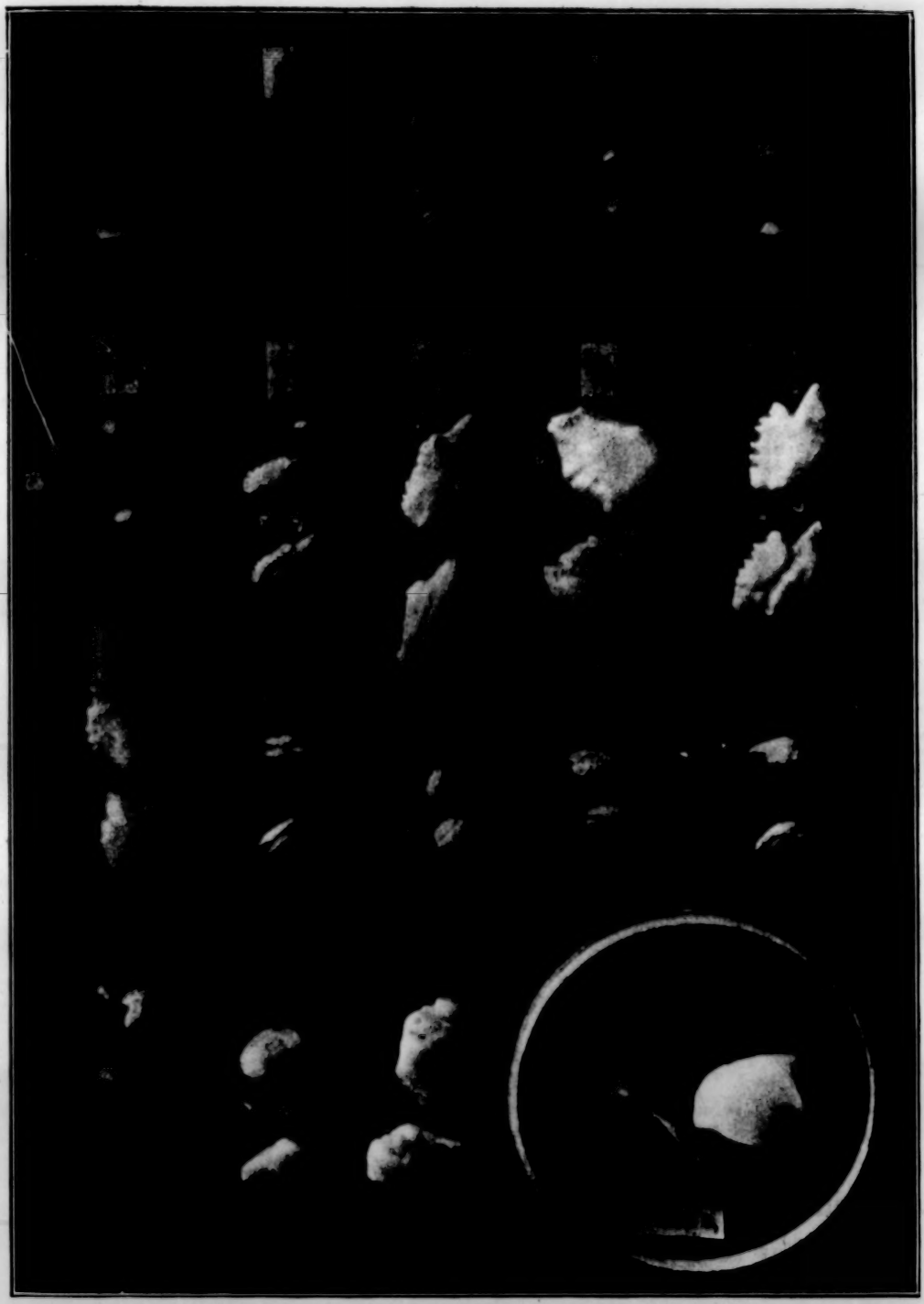

PLATE I.— Fig. 1. *Pelamys sarda*. 2. *Auxis rochei*. 3. *Brama raii*. 4. *Blennius gattorugine*. 5. *Gobius paganellus*. 6. *Exocœtus pœcilopterus*. 7. *Caranx trachurus*. 8. *Morone labrax*. 9. *Beryx splendens*. 10. *Sebastes norvegicus*. 11. *Pagellus centrodontus*. 12. *Labrus maculatus*. 13. *Osmerus eperlanus*. 14. *Salmo salar*. 15. *Thymallus vulgaris*. 16. *Cyprinus carpio*. 17. *Otolithus maculatus*. 18. *Plagioscion surinamensis*. 19. *Arius gagora* (half-set).

but not so large as *Beryx splendens* (Plate I. fig. 9), or that of *Sebastes norvegicus* (Plate I. fig. 10). The two former frequent the estuaries of rivers and the coast, the two latter very deep waters, *Beryx splendens* having been taken at a depth of over four hundred fathoms. Again, in Plate II. we may compare the otoliths of *Synodontis schal* (fig. 3), and that of *Ælurichthys gronovii* (fig. 4), both fishes of the Siluroid family. The contrast in the size of the

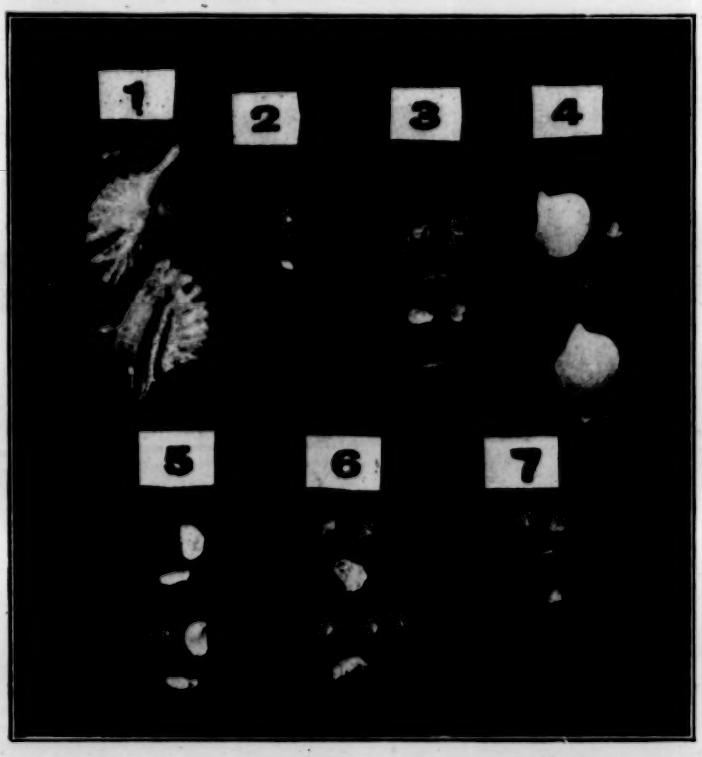

PLATE II. — Fig. 1. *Lopholatilus chamæleonticeps.* 2. *Simenchelys parasiticus.* 3. *Synodontis schal.* 4. *Ælurichthys gronovii.* 5. *Polypterus senegalus.* 6. *Lepidosteus osseus.* 7. *Hydrocyon brevis.*

The above specimens were obtained by the courtesy of the Administration of the National Museum, Washington, U.S.A. (fig. 1); H.S.H. the Prince of Monaco (fig. 2); Mr. G. Boulenger, F.R.S. (figs. 3, 5, 7); Mr. W. Stuart Cameron, of Demerara (fig. 4).

lapillus is very marked, and does not need the statement of the weights, rather less than a quarter grain for the first against three grains for the second, to emphasize it. The first fish also had a much larger head, and was generally larger than the second. It lived in the Nile; the second fish came from the sea near Demerara, British Guiana. The above is a remarkable

contrast between a shallow fresh-water type and a deep sea-water type. It is interesting to note that *Ælurichthys gronovii* is closely allied to *Arius gagora*, whose otolith is shown on Plate I. fig. 19.

Beryx splendens lives in very deep waters, and *Myripristis murdjan*, another of the *Berycidæ*, lives in water near the shore, therefore much shallower, but it likewise has a large otolith. Here, then, they follow a family type irrespective of the depth at which they live. The more commonly known Flat-fishes (the *Pleuronectidæ*) all have comparatively large otoliths, and of other fishes that live on the bottom of the sea, the Weever (*Trachinus draco*), *Uranoscopus scaber*, and the Gobies, each have large otoliths. We have here several different kinds of fishes frequenting the bed of the sea, and each supplied with a fairly large otolith. For a comparison we must go to the Blenny family, many of which live on the bed of the sea, yet they all have small otoliths. Compare that from a *Blennius gattorugine*, Plate I. fig. 4, with one from a *Gobius paganellus*, fig. 5. These two fishes varied but little in size; their mode of life is fairly similar on the bed of the sea, yet the otolith of the Goby is manifestly the larger of the two. The Cod (*Gadus morrhua*), living and feeding near the bottom of the sea in deep water, has a large, solid otolith, and so has the Tile-fish, *Lopholatilus chamæleonticeps* (Plate II. fig. 1), which lives at the bottom of the Gulf Stream, hundreds of miles from the east coast of the United States of America. The *Scombridæ*, the Mackerel family, living in the surface strata of the deep sea where they find their prey, have small otoliths. Plate I., figs. 1 and 2, show otoliths of this family. The *Sparidæ* have, as a rule, large otoliths (one from a Sea-Bream, *Pagellus centrodontus*, Plate I., fig. 11, shows this); the otolith from a Ballan Wrass, *Labrus maculatus* (Plate I. fig. 12) is much smaller, and strikingly different in shape. The two fishes, however, frequent much the same localities and depths; both are littoral fishes.

Plate I., figs. 13, 14, 15, illustrates three different kinds of otoliths from the family *Salmonidæ*. The first of the three (fig. 13) is the otolith of a Smelt (*Osmerus eperlanus*), fig. 14 shows that of a Salmon (*Salmo salar*), and fig. 15 that of a Grayling (*Thymallus vulgaris*). Their modes of life are different; the Smelt

frequents salt waters, the Salmon spends its life alternately in salt and in fresh water, whilst the Grayling lives in fresh water only. Comparing the three, the fresh-water fish has the largest otolith, but they are all fairly large.

Except with *Arius gagora* (Plate I. fig. 19), where it is on the right, the big rounded stone, the *lapillus* is always on the left, the *asteriscus* on the right, and the *sagitta* in the middle under the other two. The upper set are always from the right half of the head, and the lower set from the left side. In some cases the smaller otoliths were not got, and consequently are not shown.

Except those on Plate I. (figs. 16 and 19), and those on Plate II. (figs. 3, 4, 5, and 7), all the figures shown are examples of fish that have the *sagitta* as the largest of the three otoliths, in any one half of the skull; the examples are all from Teleostean fishes, with the exception of figs. 5 and 6 on Plate II. The exceptions are (Plate I. fig. 16) taken from a Carp (*Cyprinus carpio*), an example of the class of fish where the *asteriscus* is the largest otolith,* the *sagitta* being represented by a rod-like stone; Plate I., fig. 19, representing the otoliths of an *Arius gagora*, only those from one side of the head are shown; a member of the large family of Siluroid fishes illustrates the case where the *lapillus* is the largest otolith—it is seen on the right in the plate; in these fishes also the *sagitta* takes on the rod-like form. Figs. 3 and 4 on Plate II., both from Siluroid fishes, shows the same. In the family of the *Characinidæ* we have another repetition; it is shown on Plate II. fig. 7. In the otoliths from *Polypterus senegalus* (Plate II. fig. 5) is shown the example of a fish which has the *asteriscus* as the largest otolith, but in which the *sagitta* is not rod-like. The same occurs with the otoliths of *Calamichthys calabaricus* and *Amia calva*. In *Lepidosteus osseus* (Plate II. fig. 6) the *sagitta* is the largest of the three otoliths. The above four fishes are all of an early type; they are of the Ganoid order. Three of them differ from the fourth in the manner noted.

On Plate I., figs. 17 and 18, are shown otoliths from two of the *Sciænidæ*; fig. 17 from *Otolithus maculatus*, a fish from the Indian Ocean; and fig. 18 from *Plagioscion surinamensis*, a fresh-water Sciænoid from British Guiana. Each shows the granular con-

* This peculiarity of the *asteriscus* and *lapillus* was described in the paper on "The 'Asteriscus' in Fishes," 'Zoologist' (*ante*, p. 57).

cretions peculiar to the *Sciænidæ*. A typical example of the remarkable constancy in the same family of fishes of the characteristics of the otoliths.

Fresh-water fishes, as represented by the Perch and the Carp family, are all supplied with fairly large otoliths. The only deep fresh-water fish obtained was the *Lota vulgaris*, a fresh-water Gadoid fish; its otoliths, however, for its family, were moderate in size.

A relation has been sought by comparing the power of vision of a fish as deduced from the muscles attached to the eyeball with their power of hearing, as deduced from the size of the otolith resident in the organs of hearing. In many fishes the recti muscles of the eyeball are attached to the skull at the back of the eye, giving a short range of movement; this is seen in the *Gadidæ*. In others, again, these muscles are long, and go well back from the eyeball, resting in a long, narrow case parallel to the basisphenoid, and divided from the brain-pan by a bony septum; this is seen in *Pagrus auratus*, *Pelamys sarda*, and many others. Observations were made on sixty-seven different species of fishes representing twenty-nine families, and by classifying them we get—

Size of Otoliths.	Large.	Small.	Moderate.
Those having a long flexible muscle ...	12	20	6
„ „ short, strong „ ...	15	4	3
„ „ moderately strong muscle to the eye.....	4	3	

The long recti muscles give a quickly mobile eye, and are seen in the *Scombridæ*, which have typically small otoliths. The short, strong muscles are seen in the *Gadidæ*, which have large otoliths. Amongst the sixty-seven fishes above alluded to, the number of those having long rectus muscles giving a mobile eye and that have a small otolith exceeds those having a large otolith by nearly two to one, but in those that have short, strong muscles the number having large otoliths exceeds that of those having small otoliths by nearly four to one. But that quickness of sight makes up for dullness of hearing, or that

more acute hearing follows because of the increased size of the otolith, remains to be proved. In a paper on "The Structure and Functions of the Ear of the Squeteague," written by Professor G. H. Parker, Ph.D., and published in the 'Bulletin of the Bureau of Fishes,' vol. xxviii. 1908, Washington, U.S.A., it seems conclusively proved that in this fish the *sagitta* is essential to the function of hearing. But, as said above, it remains to be proved that better hearing follows in the case of a larger otolith.

All the foregoing remarks have dealt with the Teleostean fishes only, *i. e.* those having a bony skeleton. The large number of Elasmobranchii have to be considered. They are fishes with a cartilaginous skeleton, and do not possess solid otoliths; the place of the stone is taken by "otoconie," or ear-dust. The otoconie, like the otolith, consists of crystals of carbonate of lime. These cartilaginous skeletoned fishes require to hear, as well as the bony framed ones. Why their ear-membranes should contain dust instead of solid concretions is a mystery, but the fact remains; and in this connection it should be noted that the Sturgeon (*Acipenser strurio*) has both otoconie and otoliths in its ear-membranes.

Only one specimen of otolith from a very deep-sea fish has up to now been obtained for comment in this paper, and is shown on Plate II. fig. 2. It is from the head of a *Simenchelys parasiticus* that was obtained from a depth of seven hundred and fifty-eight fathoms. The otolith, which is the left *sagitta*, is small for the size of the fish. The right *sagitta* was damaged; only a fragment of it is seen.

THE VOCAL AND INSTRUMENTAL MUSIC OF INSECTS.

By A. H. Swinton.

(Continued from vol. xiii. p. 153.)

The snowy pinnacles, blue gentians, and baskets of poet's narcissus that young girls bring down from the mountains are the chief charms of Switzerland, but the last have faded when the grasshopper concert begins. Foremost among the violinists comes the largish, yellowish-brown *Arcyptera fuscus*, chequered red and orange, and having the marginal and central areas of its fore wings, or elytra, dilated and crossed with veins that resemble the cords of a piano. This grasshopper Goureau found in the thickets at Cologne ; I met with it in the crawling state at Montreux early in August, 1892. It was playing its selections at Geneva on the 15th, and hopping about at Chamonix on the 28th, when I was admiring the massive of Mont Blanc. It was a warm day when I first heard the loud sound of its violin resounding among the wild roses on the Saleve, and, wearied with the ascent, it was pleasant to recline in the sylvan shade and listen to its refreshing "dree-dree!" in the long and wiry grass, mellowed by the echo into a croak indistinguishable from that of the frogs and Cicadas ; the females, whose wings do not cover their portly bodies, bustled about as well as they were able, and exposed their ear-cavities to drink in the cooling melody. The smaller *Stauroderus scalaris*, a brown grasshopper with black knees and black tips to its elytra, also known as *morio*, inhabits the mountains of Northern and Central Europe. The musical male has the discoidal and scapular areas of its fore wings dilated with cross veins, and its bold notes " tsin-tirra!" are quite startling in the deep silence of the pine-clad hills that look down on Montreux, Chillon, and the placid lake ; they make you think your watch-chain has snapped. It is the only grasshopper I know that thrives in confinement ; briskly moving its

crank-like legs from thirty-five to forty times, it would cause a bird-like warble to resound through my sleeping apartment at the Villa Flora, where my relatives were staying, that resembled the dirl of a circular saw, followed by scissor snippings; and it rang the changes night and day in defiant response to the noise of the carpenter's plane, the hammering of the blacksmith, and rumble of carriage wheels. It lived and merrily sang, making its life an infancy, from June 18th until July 28th; the females I met with on the mountains in September. *Stenobothrus lineatus* has elytra slashed with velvet green; the discoidal or central area in the male is glassy, with piano-string veins, and at its extremity there is a dash resembling white paint; the female has the fore edge white. It may be found on the Surrey chalk downs; I saw a male at Guildford on July 12th, 1881, and about that date they may be heard sounding out their long-sustained "tin-tin!" both at Guildford and at Reigate. On Aug. 6th, 1883, I discovered both sexes wandering among the escargots and deadly nightshade at White Hill, further on. I then noticed that when a male encountered a female it made a snapping noise. The *Omocestus viridulus*, which may be recognized by the brighter green splarge on its plain brownish elytra, takes its delight in the grassy swamps of the New Forest, mottled over with glandular sundews and downy Saint John's wort, where, on June 18th, 1882, I listened to the males drawing the fiddle-bows of their hind legs to the tune of "vree-vree!" as it were the trickle of a rivulet. I have heard this music on the declivity of Newland's Corner, near Guildford, once the resort of picnickers, and in the swamp surrounding Odiham Castle, which, we are given to believe, in the days of Simon de Montfort, was the resort of Cranes, or as likely as not of Herons. In the West Highlands I have heard it on the small island of Little Cumbrae, and on the mainland of Kintyre, which an examination of the peat-bogs intimates was once covered with silver birch. In August, 1876, I chanced to be staying with Scotch relatives at Whitehouse, on West Loch, Tarbert, and I often wandered up the course of a brook where *Erebia æthiops* was fluttering about among the water-dropwort, foxgloves, and honeysuckle. Here I have sat down to listen to the green grasshoppers playing their strathspeys and jigs many a time to while away the idle

hours. The males came and performed for ten seconds and for twenty-five seconds, as young cocks were wont to crow on the dunghill, and when one waylaid a female on some sunny bank it would approach its head to her hind body, and make brisk music, which it varied with jerks of both hind legs, sounding out "tit-tit!" a harsh, grating, and emphatic note; or at other times it would go through a strange antic, kicking out its hind legs like a horse. When coupled it was mindful to reply to the overture of a comrade, and on alarm the male and female took a flying leap. Having an inferior violin, this musician cannot be compared to the previous ones.

Other grasshoppers populate the hillock parched by the summer sunshine. The "retetee!" of the red-shanked *Omocestus ventralis* resounds merrily in autumn among the furze all over Europe, and I have a specimen found in September in Cashmere, which only differs in the knees being less blackened. In Norway I have met with snuff-coloured varieties whose orange legs concealed them on the heather stained by the stagnant swamp, and on the Swiss mountains, and around Nantes and Turin I have met with the handsome black variety in which the hues of burnt sienna and Vandyck one is wont to admire in the Devonshire cows commingle. The red-legged grasshopper is a wandering minstrel; I have heard one play its "retetee!" like the mellifluous warble of a brook, for more than twenty seconds, and then, on unexpectedly encountering its rival, at once to throw out a challenge of "whee-whee!" after which it lowered its left leg to listen; and then, presently meeting with a female of a distinctly different species, it sounded "thiph-thiph!" So does the instrumentation of some sprightly opera with quips and cranks ring the changes from grave to gay to express unknown emotion. Grasshoppers are born musicians, and this one has an excellent violin, for the wing areas on which the hind legs strike are all dilated with cross-veins. The common *Stauroderus biguttulus* may at first sight be recognized by its soft and downy breast and fore legs, for it is hairy, like Esau, and what ladies would call a "cossetting creature." Found all over Europe in endless variety of subspecies, it is well named the "Variable Grasshopper"; its sports are brown, green, and ochreous. On sandy spots, such as the Calais flats and table-

land at Valladolid, a yellow-green variety is seen, and in its company there crawls a pale grey variety with a good deal of dot and dash on the elytra. The prettiest sport I found enjoying the sunshine of Valladolid; it had its legs and body coloured a warm orange-red, and seemed some import of the tropics—a flying nosegay, for the species has some power of flight. I saw an individual attempting to fly on the Calais flats, and on Sept. 20th, 1883, I noticed one taking a parachute leap on a hedgebank at Guildford. On the islands of Guernsey and Herm I have met with dwarfed males, and I have found pink specimens often at the seaside, but sometimes inland, as at Guildford in September, 1885, and on the Grande Saleve, at Geneva, in August, 1892. These have the same resemblance to the ordinary grasshopper that a boiled Lobster has to a live Lobster; I have noticed this change of colour in acorns. On the hills of Surrey the cheery "wree-wree!" "wheep-wheep!" and "reta-reta!" of the Variable Grasshopper resounds from the end of June until October brings the frost and damp. When the male begins its music it moves its legs forward swiftly, giving from eleven to twenty-one strokes over the glassy front edge of its elytra, and then for five seconds the notes run together with a liquid trill delightful to the imagination of the female, who sits sweltering on a sunny bank with a leg lowered to expose an ear-cavity, and interpret a language of flowers; sometimes, overpowered by the languid breath of summer, the enamoured male gives six laconic strokes, with a pause between each floating note, after which it depresses a leg, the right most readily, to listen and await a response; and should it then get none, it will leap forwards on to a grass-stalk, crawl down it backwards, clean its head and its antennæ with its fore legs, and strike up again. Should a dazed and sleepy rival come in its way it will leap on it, give it a bite, and so elicit an angry response. But it is when celebrating the requiem of summer that the music of the Variable Grasshopper becomes a sentiment. In October, 1876, I went to Calais on a visit to cousins, the daughters of Thomas Hog, the editor of 'Trivet's Chronicle,' and a brother-in-law of Frazer Tytler, the historian. The year departed in smiles, while I daily perambulated the old ramparts, watched the children and dragonflies at sport in the gardens of the Frontsud, or walked on the jetty where the

painter Turner saw the packet-boats arrive. I recall that the only time I ever saw Thomas Hog, *paterfamilias*, a little spare man, he rapped his snuff-box, and astounded me by saying he had once taken an oar and rowed the packet-boat from Calshot to Southampton. In those days when becalmed mid Channel on a voyage to Boulogne, it was the fashion to fish for Mackerel. Often on my return, after seeing the prismatic beauty of a misty sunset, I heard, in gloom of the evening, a fitful moan of grasshoppers where the dark soil at the seaward foot of the glacis afforded them concealment, and instinctively understanding this to be their epithalamium, I returned in the glow of noonday to be present at their nuptials. As I drew near the scene of the tourney, I heard a surging sound that resembled the drag of the waves on some pebbly shore which when I approached arose like the sound of a hasty shower, and melted on the ear like the patter of aspens, the bubbling of water, and the remote warble of nightingales. Then sitting down on the seaweed to understand the ways of Liliput, I observed that it was the charms of a corpulent female, so much in estimation in eastern lands, that provoked the astounding chorus, for whenever she was espied by a wandering male, he jerked his right leg forward with a sound of "thirp-thirp!" and then the grasshopper bands around, one and all, vied in celebrating her praise, the favoured beauty the while retaining a leg lowered to revel in the adulation. When a rival appeared the male, who was executing a solo, flew in his face like an angry dog. On finding himself again alone he gave a gentle stroke with his legs, producing but little noise, and, leaping on the female, he gave her a quiet bite. This caused her to hop off, whereupon he followed, and endeavoured to engage her attention with a tune, until his patience being exhausted, he swayed a leg forwards from one to five times, producing a goose-like cackle, at which critical moment one of those black Rove Beetles, known as the "Devil's Coach Horse," came on the scene with open jaws and cocked-up tail. That autumn seems to have been favourable for the increase of grasshoppers, for when the stove was lit on Nov. 26th, and my lady friends were working monograms and solving conundrums, I took up the 'Univers' newspaper, and read a notice from the south of Spain, which told of an alarming invasion of the

country around Gibraltar, Jaen, and Xeres by Locusts, supposed to have come from Africa.

The terminal joints of the antennæ of a grasshopper are pitted like the carapace of a Crab or Lobster, or the leaves of thyme and rosemary, and these pores no doubt enable it to inhale the manifold fragrance of the herbage, and distinguish what is noxious and what is good for food. About seven of the European grasshoppers have these joints dilated into a flapper, recalling the knobs of a butterfly, and these take their delight on sunny hills. The male of the minute *Gomphocerus maculatus*, that has piano-string cross-veins on the central cell of its elytra, rattles away like a Canary on hill and dale in Surrey. I have watched it wandering among the tufted gentians and starry yellow-wort on the declivity of Box Hill, perambulating the heathery knolls of Norway where the cloudberries grow, and the desolate lands of Brittany; on the height above Pallien, near Treves, where there is a panorama of the valley of the Moselle, I found one that was snuff-coloured. The *Gomphocerus rufus*, which can be only distinguished from the Variable or Common Grasshopper, which its varieties exactly resemble, by the knobs on its antennæ, I have met with on Box Hill, near Turin, and at Montreux in September. One would imagine that it and the Variable Grasshopper had a common ancestor. When the male performs it vibrates its legs to and fro twenty-four times, and gives ten strokes before the "thiph-thiph!" that sounds for five seconds is heard. When soliciting a female it moves its legs to the tune of "wuf-wuf!" As the elytra have not the piano-strings invariably distinct, certain individuals must acquire celebrity for their music, and, finding more readily a partner, generation after generation will celebrate in louder and louder tunes the balmy air of Surrey. The male of *Gomphocerus sibiricus*, who has his fore tarsi clubbed in order to properly lay hold of a wary female, on the alpine slope sounds out "tray-tray!" You may hear it among the rhododendrons at Pont-resina, on the Dent de Morcles, or Rocher de Naye.

Certain grasshoppers differ from the preceding in having their thorax less pinched in like those tight stays that the doctors consider so objectionable. The *Chorthippus parallelus*, small and wiry, with brownish or greenish translucent elytra,

and a sluggish semiapterous female, is at home on the Hampshire heaths, where it enlivens the bare, sunny patches among the scattered furze-bushes with its "thiph-thiph!" I have met with it in Spain in July, in Norway in August, and in Switzerland in September, where I sometimes heard its joyful music arise after the warm sun had gone down on the Lake of Geneva. Among the boleti-overgrown stumps and amber foliage of the birches on the moor of Rannoch, where the males, and especially the females, were blackened as with charcoal, I have heard its melody as late as Oct. 11th. The *Chorthippus albomarginatus* has a gayer greenish yellow appearance; the note of the male, "whir-hewee!" made by four strokes of the hind legs, is first heard among the meadow-grass at Morges, on the shore of the Lake of Geneva, in June, and when five seconds are gone he sounds out again, often lowering the right leg to listen. When soliciting the favours of his female he executes a harsh and imperative "creech-creech!" by a skilful movement of both legs, or one only. The *Chorthippus dorsatus*, larger, with puffed-out cheeks and sienna brown in colour, I have found at the outset of July living happily on the site of Whitlesea Moor, once the paradise of the entomologist (where a man driving cows gave two jumps to show how the water under the sod caused it to undulate), and later on at Ramsgate. In August I have met with it on the sandy soil of Leon, once the capital of Spain. Yersin says the male sounds out "raytzin!" The *Stenobothrus apterus?* or *S. brachypterus?*, mottled with sienna and gamboge, I have seen on the ascent above Montreux in September; like other alpine semiapterous insects, it is no doubt a variety of some species existing or extinct that passed its life in the valleys. A short and efficient musical comb runs along the lower end of the raised edge on the thigh of the male, and the somewhat feeble "ree-ree!" given out by the puffed-out, glassy elytra most approaches the shrill of the crickets, but the performer who is not absolutely sure of producing this admirable note sometimes contents himself with kicking up his hind legs. The males of *Stethophyma grossum*, slim, hop-brown grasshoppers with yellow and carmine stripes that populate the long grass at the side of swamps in Central and Northern Europe, are said to sound "tze-tze!" when molested by means of the raised edge on their

thighs, which is notched, but perhaps this is fancy. Mr. Kidd, a son of Dr. Kidd, of Godalming, once sent me two of the grasshoppers supposed to be British, which he had received from Mr. Barrett, who he made the acquaintance of when on a visit to Haslemere. I then wrote to Mr. Barrett, but his memory was at fault. Since I have heard from Mr. Bankes they may be found in the New Forest. I have seen them and the *Mecostethus alliaceus* on the banks of the Po; the latter, when they leap on to a reed, crawl backwards, as if they were going down a ladder. Once I saw a male trying or wishing to perform. It is supposed that the males of the genus *Pneumora*, with bodies inflated like a soap-bubble, that inhabit the Transvaal, make a terrible racket in the evening. I know little of South Africa, but I remember, when riding up the Lion Mountain at the Cape to see the silver trees, being tempted to dismount by some grasshoppers with coloured wings that I failed to catch.

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

Greater Horseshoe Bat in Wiltshire.—As far as I am aware the Greater Horseshoe Bat has not been recorded from Wiltshire, although it has occurred in the neighbouring counties of Gloucester, Somerset, Dorset, and Hampshire. It will therefore be of interest to record the fact that the Rev. J. H. Brown, of The Rectory, Great Cheverell, Devizes, sent me a fresh specimen of this Bat, taken in the glebe farm adjoining the Rectory, with a letter of June 29th, 1910. According to information supplied me by Mr. Brown there is at least a small colony there. Not wanting the specimen, I sent it to the Dublin Museum.—G. E. H. Barrett-Hamilton (Kilmanock House, Campile, Co. Wexford).

Black Variety of the Water-Shrew in Suffolk. — On July 10th I noticed a dead example of the black variety of the Water-Shrew (*Sorex remifer* of Bell) lying on the gravel-path close to the church-porch at Blaxhall, Suffolk. The nearest water is about half a mile distant. As this is by no means a common animal in the county perhaps the circumstance may be worth recording. — G. T. Rope (Blaxhall, Suffolk).

Albino Variety of Common Shrew. — It may be interesting to record that I had given me (June 29th last) an albino variety of the Common Shrew (*S. araneus*). It appears to be a mature one. The belly is practically pure white, the rest of body and head pale cream. It was killed by haymakers at Dinton, about four miles from here.—Edwin Hollis (The Museum, Aylesbury).

Albino Wood-Mouse in Montgomeryshire.—On Aug. 1st I received from Mr. Vincent P. Lort a young albino Wood-Mouse (*Mus sylvaticus*) which had been caught alive in a hay-field at Llanllugan, Montgomeryshire. So far as I can learn this is the first albino of the species met with in Wales, though there is a buff-coloured specimen (obtained in Cheshire) in the Chester Museum. — H. E. Forrest (Hillside, Bayston Hill, Shrewsbury).

AVES.

The Nightingale (Daulias luscinia) in Lancashire: a New Record.—I am pleased to be able definitely to record the Nightingale for the county of Lancashire. Mr. W. Hardy, of Oldham, has just sent for my inspection a mounted specimen, together with many particulars relating to its origin. "About forty years ago" the bird took up its position in a small clough or wooded valley between Ashton-under-Lyne and Oldham, in the south-east corner of the county. So many people crowded to listen to it that the occupier of the land—a Mr. Webb, of Dean Shut—had the bird trapped, afterwards giving it to his neighbour, Mr. J. Hardy, the grandfather of my present correspondent. The history of the specimen appears to be quite beyond doubt. It is an adult with fresh plumage, showing no signs of captivity; nor have I been able to detect traces of either shot-holes or blood-marks on the feathers. This last supports the statement that the bird was trapped and not shot. Mr. Hardy cannot say which was the exact locality, but it must be one of two small cloughs tributary to the Medlock Valley between Parkbridge and Bardsley, on the Oldham side of the river. The southernmost of these is still very secluded, and not at all an unlikely place for the species, judging from its superficial resemblance to many Nightingale haunts that I have seen in other counties; and in 1870 the district would be far more suitable than it is to-day. I am pleased to say that Mr. Hardy is presenting the specimen to the Oldham Museum. It is not necessary here to discuss the many unsupported records relating to the Nightingale in Lancashire. Mr. Mitchell mentions the most likely in the introduction to his 'Birds of Lancashire,' but he does not include the species in his list. The latest account of the birds of the county ('Victoria History, Lancashire,' vol. i. p. 192) accepts the species, but the absence of any details of place, date, or observer detracts from the record. Mr. James Arlosh, in a brief footnote to a general paper (Trans. Cumberland Assoc. Lit. and Science, pt. v. (1879), p. 131), says that it visits each year Prestwich Clough, near Manchester, but he gives no authority for his statement. The Nightingale has occurred, and apparently nested, within ten miles of the present Lancashire locality—at Romiley, in the neighbouring county of Cheshire, and within fifteen miles at Strines, on the Cheshire-Derbyshire border (*cf.* T. A. Coward, 'Vertebrate Fauna, Cheshire,' i. p. 132); but, so far as I know, this Oldham bird is the only existing specimen from either Lancashire or Cheshire.—FREDK. J. STUBBS.

Red-backed Shrike (Lanius collurio) breeding in Merionethshire.—On June 23rd I saw a male Red-backed Shrike (*Lanius collurio*) on the telegraph-wires by the railway near Arthog, Merionethshire. On examining him with the field-glasses I found he had a grasshopper in his bill. After a few minutes he was joined by the female bird, which was carrying a small beetle. From the wires they flew into an oak-tree, and there the male perched on the end of a dead bough, calling harshly, and vigorously jerking his tail. Immediately below was a thicket of seedling birches, varying in height from a few inches to ten feet. Presently he dropped into this, and shortly afterwards was

NEST AND YOUNG OF RED-BACKED SHRIKE.

followed by his mate. On entering the bushes I heard the nestlings, and after some searching came across the nest in a birch about nine feet high. It was placed about five feet from the ground, and was, as usual, large and not very neatly put together. Small twigs, bents, coarse meadow-grasses, and sheep's wool were the materials used for the outside, and the nest was lined with hair and cotton-grass. The latter grows in profusion on Arthog Bog, and I found the nests of several other species lined with it. There were four young birds apparently some ten days old, and one addled egg in the nest. The

nestlings were generally of a buffish colour, the head being paler than the body; the under parts were distinctly spotted and barred, and this became more noticeable before they left the nest. The tongue and the inside of the mouth were orange-yellow in colour and unspotted. The flanges were pale yellow, and the upper mandible was distinctly down-curved. There were no thorn-bushes near to the nest, and I was unable to find any insects impaled on a gorse-bush near by. The parent birds were very bold whenever the nest was approached, and when I put up the camera to photograph the young they moved from bough to bough, continually jerking their tails up and down, and "chacking" in a most threatening manner. The nestlings left the nest on June 29th. This Shrike used to breed in some numbers in the Barmouth district, but is certainly less common than was formerly the case.—C. Kingsley Siddall.

Lesser Redpoll at Hampstead.—Since the publication of my note on the breeding of the Lesser Redpoll here (*ante*, p. 209), I have found two more nests, making seven in all this year, and quite half a dozen more must have eluded my search. On one occasion I found a male bird sitting on one of the above nests, and while so occupied he commenced his loud trilling note, which soon had the effect of bringing up the female, who fed him on the nest, although I was standing within two feet of it at the time.—C. H. Meyrick (The Mount, Hampstead).

Mortality among House-Martins.—It would be interesting to know in what other localities the House-Martin (*Chelidon urbica*) has decreased as in this neighbourhood. During the first week in July I picked up several dead ones in this and adjoining parishes, since when I have kept careful observation on the species, and find its remaining numbers are few indeed, while I fear the mortality has been a very heavy one. From several other places in this county I hear of the same scarcity. During June we had a prolonged spell of wet and cold weather, and this may have affected their food-supply. On the other hand, Swallows, Sand-Martins, and Swifts do not appear to have been similarly affected, and the former at least have succeeded in providing for full nests of young. That the House-Martin depends to an extent on a different food-supply may account for such results.—J. Steele-Elliott (Dowles Manor, Shropshire).

An Account of a Ramble with the Birds in Anglesey and Carnarvonshire.—Our rambles in the interest of bird-life this year commenced on the 24th day of March, on which date we cycled to

Anglesey, a hilly district, where last year a pair of Buzzards bred. We only saw one Buzzard, which was sailing high up above us, mewing at times, but it soon disappeared from our view behind one of the hills. Although the old eyrie had been repaired, the birds never used it, but they brought off another brood somewhere in the same district, as, during a period of three weeks of our visiting the place, we only saw one of the birds, and then we noticed the pair together again, from which we concluded that one had been engaged in incubating. On Good Friday, my friends had the good fortune of seeing six Buzzards together in the air, and they said that it was wonderful to see them sailing and swooping after one another. Also, whilst sitting down on the mountain side, partaking of lunch, they watched a pair of Choughs feeding, and by the aid of a monocular they could easily distinguish their red beaks and legs. A Raven's nest containing two eggs was found, and a pair of Peregrine Falcons were seen near to Llyn D., on Easter Monday. Going up the Ogwen River on April 9th, we saw some Dippers and a pair of Grey Wagtails, and amongst some climbing plant growing on a young silver birch was a Long-tailed Tits' nest with five eggs. On April 15th the first arrival of the Swallow was noticed here. Some Bullfinches, Chiffchaffs, two pairs of Grey Wagtails and a Kingfisher were amongst some of the birds seen on the 17th on the Cegin River. This latter bird bred in one of the banks of this river last year, but, during the winter the bank was washed away, so we did not come across their nesting-hole this season. There are two Heronries close by this town (Bangor), which are flourishing on account of their being well protected, and towards the end of March the nests at one of them had eggs in, while some contained young. Castle Rock in Red Wharfe Bay, Anglesey, is a home of the Stock-Dove, and here on April 24th many eggs were seen laid in the rabbit holes, and in some cases in crevices. Near to the Tubular Bridge which spans the Menai Straits young Peewits were seen in a field, and at the woods there were some Carrion-Crows and a Kestrel. Just by the bridge, hearing a peculiar noise, we tried to locate it, and found that it was uttered by Guillemots, which had flown on to a stone ledge at the top of the bridge at a great height above the water. Here I may mention that my friends at Conway found a nest of a Long-eared Owl with three young birds, as well as nests containing eggs of Carrion-Crows, Magpies, and Redshanks. Aber is visited on May 4th, and in a hole in a tree are found two fully-fledged young of the Tawny Owl, while the parent bird itself, which

had been seen flying from out of the hole, had perched on a tree close by, and it was not long before it was being mobbed by Carrion-Crows. Some Ring-Ouzels, Wheatears, and a Woodpecker were noticed, whilst just before returning a Redstart was seen. May 7th we cycled to Penmon, but on arriving it started to rain so we did not stay there very long. However, at the cliffs we saw a pair of Peregrine Falcons and also five Gannets, but these latter do not breed here. A colony of Kittiwakes breed here on Trwyn Dinmor, and on this day they were flying together a little out at sea. We again visited Penmon the following Saturday. As we neared our destination we perceived a Stonechat flitting about some gorse bushes, so we immediately dismounted and went in the direction of the spot. When walking through the long grass we flushed a Skylark from its nest containing three eggs. Soon the Stonechat was joined by its mate (the hen), and together they were very excited at our intrusion. After a long vain search for their nest, we came across a young one hiding beneath the gorse. Just as we were on the point of going for our bicycles, a bird alighted on the ground not far off which puzzled us at first, but on getting closer we found that it was a Yellow Wagtail. It was about six and a quarter inches in length, with a much shorter tail than the others of its species, this being dusky brown with the two outer feathers white; chin, throat, and breast yellow; back, olive brown; wing coverts, dusky brown; primaries and secondaries, dusky brown, the former being edged and tipped with yellow, and the latter only being edged with yellow. At length it flew off, and on following it we saw it in company with another bird like itself, though a little brighter, and this was probably its mate. Although the Yellow Wagtail has been recorded as seen passing over the west of Anglesey, I think that this is the only record of it having stayed in the county, for the pair were again seen there about a fortnight later. They might possibly have nested there, but although we searched carefully for the nest we were not able to discover it. Proceeding on we passed by an enclosed area where deer are kept, and on a pond within were a pair of Sheld-Duck.

At the Priory Woods Jackdaws were seen going in and out of their nesting-holes in the old trees. Now and then we heard the "yaffle, yaffle" of a Green Woodpecker, and although we came across many nesting-holes of this species, we found that they were nearly all occupied by Starlings. In a hole in one of the old trees we found a nest of the Tree-Sparrow containing five eggs, and another one

empty. When crossing the common towards the cliffs, we saw a Meadow-Pipit rising from the bracken and grass-covered ground ahead of us. On coming to the spot, we found the nest with its three eggs after a little trouble, built beneath the friendly shelter of a bracken leaf. The Kittiwakes had by to-day settled down, and some of them had nests nearly ready. As we were lying down full length on the top of the cliff, peering down, a bird flew from out of a crevice in the rock about two yards below us. This was a Rock-Pipit, and, after endeavouring to see into the nest, we found that it contained four greyish rather long eggs. A Kestrel was seen leaving a little cliff, but we could not discern any eggs on the grassy ledge whence it flew.

Before leaving Penmon we found a single Oystercatcher's egg, laid in a scratching lined with sheep-dung as a substitute for pebbles. One evening following this, we cycled to Llyn-Bodgylched. Here, just as we arrived at the top of a little hillock in view of the lake, the first birds that met our gaze were a pair of Coots, together with their brood of six. The old birds immediately flew off, their tails trailing the water in doing so, while the young scattered in all directions into the rush. Next we found a nest with five eggs of a Sedge-Warbler, which was very well hidden in the thick sedge. In walking through the reeds, &c., we came across a brood of young Wild Duck, but we did not get a long glimpse of them, as they soon disappeared, and all we could see was the shaking of the reeds where they were. A few Reed-Buntings were flying about, the cock birds of which were very conspicuous with their black heads. At the other end of the lake, a flock of Black-headed Gulls rose up from the rush and kept screaming overhead. Thinking that they might have nests, we waded out, but, alas! we could not go as far, so we could not ascertain whether or not they had nests, but the place is very suitable for them. On Whit-Monday my friend went to the mountain, I myself going to Newborough in order to see the Merlins which I knew bred there. Leaving my bicycle at a farmhouse I pushed forward into the sand-dunes, and found that Wheatears abounded in the place; but, although common, their nests were difficult to find. In a marshy field near to the sea I watched a pair of Redshanks that were flying noisily overhead, thinking that they might have a nest, but from the noise they made and considering the time of the season, I thought that most likely they had young. Saw a Cuckoo being chased about by a pair of Meadow-Pipits, and on a river were some few Sheld-Duck. At length I arrived at the spot where the Merlins

had their nest last year, but now I could see no sign of them. However, I had not gone far from it when I heard a loud "kek, kek, kek," and there, sure enough, was the Merlin leaving a dune a little ahead of me. This must have been the male bird on the look-out, for, when I reached the dune, the other bird flew off from close by, and, on rushing to the spot, I discovered the four beautiful red eggs laid in a scratching lined with coarse grass. Meanwhile, my friend, who had gone to the mountains, was spending the afternoon in trying to locate a Peregrine's eyrie, but although the birds would frequently fly on to a whitewashed ledge, he could not make out where their eyrie was situated, not even by the aid of binoculars. He also saw a Raven's nest containing five young, and a nest of a Ring-Ouzel with two eggs. This Raven's nest was the third that we knew of this season, and I am glad to say that each one of them reared off a brood—one of two, one of three, and this one of five. On June 7th I went with the Friars School Field Club to Puffin Island, where a most enjoyable time was obtained. Herring-Gulls, Lesser Black-backs, two pairs Greater Black-backs, Puffins, Guillemots, Razorbills, Shag, Oystercatchers, Rock-Pipits, and a Wheatear were the birds seen on the island, and some eggs and young of some of these species were found. After having been on the island for about two hours, news was brought that one of the boys had fallen over a cliff, and was seriously injured, so everybody was obliged to return quickly to the little steamer, and on our arrival at Bangor the unfortunate lad was taken to the infirmary, where he is now rapidly recovering. Knowing that the Nightjar occurred at the grounds near to the Tubular Bridge, we visited there on July 15th, and began beating about in the ferns. When we arrived at the other end of the field we at last flushed the Nightjar, which flew noiselessly away from its two eggs harmonizing so well with their surroundings. This was the fourth year that we knew of for the bird to breed at this place, and each time it had reared off a brood. Before leaving we found a Kestrel's scratching, situated in a hollow formed by the roots of an oak-tree, growing outward from the top of a cliff, and in this were laid four eggs. A few Corn-Buntings were seen perched on the telegraph-wires, uttering forth their long-drawn note, and a Whitethroat and a Tree-Pipit were flitting about a hedge. Aber was again cycled to, and in going up the river we saw some Dippers and Woodpeckers, the latter flying hurriedly away from the trees, calling forth their note. In a hole in a tree was found a nest containing five young of a Redstart, and near by a nest with three eggs of a Spotted Fly-

catcher. At a lake (the name of which is not known to me) in Anglesey we accidentally came across a pair of Mute Swans with four cygnets, and these could not possibly have been placed here, as the district is very wild, and all the birds kept away from us. The last two places visited were Llanferfechan and Bwrdd Arthur, in Anglesey, by my friend alone, I myself being unable to accompany him. At the former place he found eggs of Lesser Terns and Ringed Plover, and at the latter place were a colony of Cormorants breeding. Before concluding, I must mention that my constant companion referred to is H. King, B.Sc., of Bangor.—T. Owen (Pen Parc, Bangor, North Wales).

Notes on Nest-boxes.—During the past season we have had in our nest-boxes, &c., the Robin (three nests in kettles), Great Tit, Blue Tit (several nests of both), Creeper (behind a piece of wood nailed to a birch), Tree-Sparrow (many), House-Sparrow, Starling, Tawny Owl, Stock-Dove. For the first time for many years we have had no Nuthatches, nor did any come to feed in the winter. One box contained nine Tree-Sparrow's eggs at the same time, but when blown they proved to be a mixed lot, some being quite fresh, and some stale. The Tawny Owls, which have bred in the church-tower for the fourth year in succession, had four eggs, and took away two young birds; but another pair, which nested in an old cask in our grounds, reared four young from their four eggs. The hen in the cask, a very fine reddish-brown bird, was very tame, and never once left the nest or even moved when I put a ladder up. When the owlets were about a week or ten days old, she would lie half on her side at the far end of the cask with her family a few inches from her, looking rather like an old Cat with her kittens, and the whole group made one of the prettiest pictures of bird life I have ever seen. The best bag I have seen in either nest was one of four Rats in the one in the tower. Stock-Doves have not done well; more than one clutch of eggs was destroyed, and a pair of young ones about the size of Blackbirds were killed in the box. This I believe to have been the work of Starlings. A pair of Blue Tits used an old House-Martin's nest on a neighbour's house, where there has been a Martin colony for years. They hatched out their brood, and seemed to be on the best of terms with the Martins around them. Some men hoeing wheat in the adjoining parish of Norton showed me a Snipe's nest in the middle of the field; probably the wet state of the meadows had driven the birds to a higher and drier site.—Julian G. Tuck (Tostock Rectory, Bury St. Edmunds, Suffolk).

PERSONALIA.

Lieutenant Boyd Alexander.—We have at last heard definite news of the way in which Lieutenant Boyd Alexander met his death. The communication, which has come from Lieutenant Childers Thompson, can only increase our sorrow at the general loss to our country, and our sympathy with Lieutenant Boyd Alexander's family. There must be many who will be glad to know that a memorial to the brothers Boyd and Claud Alexander, both of whom lost their lives while engaged in exploration in Central Africa, will be erected in their ancient parish church at Cranbrook, in Kent. Amongst the subscribers to the fund are the Royal Geographical Society, the Rifle Brigade, and the Scots Guards. As Boyd Alexander was a contributor to 'The Zoologist,' some of your readers may be glad of an opportunity of making a contribution to the Fund. Subscriptions may be paid to the Alexander Memorial Fund, London County and Westminster Bank, Cranbrook, Kent, or to myself.—Wm. Bell (Cranbrook Vicarage, Kent).

The 'Bulletin of the Société Géographique de Paris' publishes the following comments on the murder of Lieutenant Boyd Alexander:—

"On April 2nd last the English explorer, Boyd Alexander, well known for his important expeditions to Africa, was assassinated at Nieri, about seventy miles to the north of Abeshir. No responsibility devolves upon the French authorities for this tragic accident; not only did they warn Lieutenant Boyd Alexander of the dangers he was running in trying to continue his journey towards the East, but also formally begged him not to leave our stations. Being persuaded of the futility of these fears, the English traveller set out, so to speak, surreptitiously. Some hours afterwards he was attacked and killed. The unfortunate explorer was the victim of the disturbed state of things created on our territory by natives under British jurisdiction. Darfur, which belongs to England, is the last stronghold of the slave-raiders; accordingly, finding their shameful traffic menaced by the occupation of Wadai, which henceforth shuts off their access to vast territories of our colonial empire, whence they used to come to draw their supplies of human cattle, the men of Darfur did not hesitate to proceed to attack our troops, and to raise the people of Dar Guimer and Dar Tama against us. Documents seized at Abeshir leave no doubt as to their having practised such intervention.

"This disturbed state of things is a consequence of the French and English possessions in that part of Africa not being delimitated. In the interests of general pacification, not less than those of geography, let us hope that the delimitation will shortly be proceeded with. The frontier indicated in the text of the Anglo-French Convention of 1899 passes through unknown territories; moreover, the exact determination of the boundary will afford precious materials for a knowledge of a very interesting portion of Africa."—*African World*, August 6th, 1910.

NOTICES OF NEW BOOKS.

Birds of New York. Part I. "Introductory Chapters: Water Birds and Game Birds." By ELON HOWARD EATON. New York State Education Department, Albany.

IN 1844 the above department published a "comprehensive and finely illustrated treatise" on the Birds of the State, prepared by James E. De Kay, and now, after an interval of more than sixty years, the present massive first instalment of a much more exhaustive work is the subject of this notice. During the interval between the two publications no fewer than one hundred species of birds have been added to the State list, and the hope is expressed that a principal function of the book will be to further promote the protection of the birds themselves.

The introductory chapters are characteristic of the thorough and complete manner in which details are worked out by our American colleagues. The "Life zones of New York State," so far as the avifauna is concerned, are exhaustively treated and liberally illustrated. As regards the ever-increasing literature on birds, the following remarks are very applicable:—"The author has been asked many times to name the best book for the bird-student. This task is too difficult, for the requirements of bird-students are as varied as the number of books. The book is not of so much importance as the attitude of the student. The author learned more from an old thumb-worn, imperfect copy of 'Ornithology,' evidently compiled from the works of early writers, principally Wilson, than he has from any exhaustive

treatises of recent publication. He knew the coloured plates of De Kay's 'Birds of New York' so well that the species therein depicted were recognized at the first meeting in the field." To a large extent this is the experience of most of us, but even then it would scarcely be possible to find in an old publication the data on bird migration which are given in the present work, while the "county schedules" form a digest worthy of the admiration of a statistician.

As stated on the title-page, only the Water Birds and Game Birds find a place in this first instalment of the series, and besides the numerous illustrations in the text there are no fewer than forty-two coloured plates at the end of the volume. These deserve special mention, as the artist, Mr. Louis Agassiz Fuertes, contributes a foreword, "Illustrator's Note," an innovation that might well be more generally followed, for as a rule we only see the work of the artist, and know nothing of his opportunities or limitations; his personality is too much behind the curtain. Mr. Fuertes tells us that for accuracy the colours of birds, not alone their feathers, must be taken from "actual specimens, painted, in short, from living or fresh taken birds, before the settling of the body fluids or the disintegration or absorption of pigment could take place," while the high colour is only attained in adult birds and at the approach of the breeding season. For the last ten years the compilation of these colour records has been the most important part of the field-work of this conscientious zoological iconographer.

Not only may this quarto volume be a source of legitimate satisfaction to the author and artist, but also to Dr. J. M. Clarke, the Director of the Science Division of the New York State Education Department, to whose insistence this expensive work has been adopted as a State liability.

EDITORIAL GLEANINGS.

PROF. W. F. BARRETT, F.R.S., in an article on "Creative Thought" ('The Quest,' vol. i. p. 616), has approached the philosophy of the biological arena from the somewhat mystical standpoint. He writes:—"May not a similar cause be at work in the many cases of protective mimicry, as well as protective coloration, found in the animal kingdom? If we accept the usual biological explanation of protective mimicry, the long intermediate stages required by natural selection would render the creature not less but *more* conspicuous among its kind, and therefore expose it to greater danger of capture and less chance of survival. In fact I am convinced that biologists have too long closed their eyes to the *psychic factor in evolution*—the directive power of the unconscious within the organism. Evolutionary processes in nature are according to this view the expression of the creative power of thought, using the term in the wider sense already defined. But it is *thought immanent, operative and transcendent, within the organism.* And it is interesting here to recall the fact that one hundred and fifty years ago, Swedenborg—who was a true seer as well as a learned man of science—explicitly urged this very hypothesis of an inherent directive force in the development of the forms of life.* A century later E. von Hartmann, in his well-known work the *Philosophy of the Unconscious*, developed much the same view, only he rejects all anthropormorphic ideas, or any form of consciousness or personality in the Supreme apart from nature, whereas Swedenborg's theology is the reverse of this. Von Hartmann with

* "Thus in his *Economy of the Animal Kingdom*, § 275, he writes:—'We must acknowledge, if we think of causes and origins, that such a directive or formative force is not without but within the chick or embryo; and that it must exist within that substance that was first in the ovum, and that has life or soul within it,' &c. In fine he tells us 'the infinite is in the finite, as in receptacles.' Moreover, now that telepathy may be regarded as a *vera causa*, every living cell in the organism (as Mr. Gerald Balfour has conceived) is possibly in telepathic *rapport* with every other cell, and our unitary consciousness may be the result of this *rapport* among the brain cells. The wide philosophical implications of telepathy have not yet been adequately discussed."

great wealth of learning shows that in the phenomena of instinct and of clairvoyance (which latter he states as did Schopenhaur, only the ignorant reject) we have additional evidence of the operation of the Unconscious in life."

"Is it therefore illegitimate to assume that the Unconscious, the psychic factor in evolution, is operative in the process of development to bring about more perfect organs and higher types of life? It seems to me impossible to explain, *e.g.*, the development of the mammalian eye according to the usual method adopted by biologists. It would take me too far aside from my present purpose to trace out this argument; I can only state after a prolonged study of the subject of vision, that blind and fortuitous evolutionary forces, or endless ages of natural selection, appear a more incredible hypothesis than the assumption of unconscious thought, ever operative within the organism, as the directive force in evolution."*

* "The bifocal eye of the Brazilian fish *Anableps* is inexplicable upon a purely naturalistic theory. Mr. T. W. Rolleston, in his suggestive work *Parallel Paths*, has referred to the *Anableps*' eye, pp. 100 ff., and shows how impossible it is for natural selection, laying hold of fortuitous variations, to explain this remarkable organ."